[PROC. ROY. SOC. VICTORIA, 49 (N.S.), PT. I., 1936.]

ART. VI.—*Additions to the Australian Ascomycetes, No.* 3.

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[Read 11th June, 1936; issued separately, 23rd November, 1936.]

Introduction.

Since the issue of the last paper in this series (1926), a monograph of the North American Cup Fungi (Operculates) has been published by Seaver (1928). It contains many excellent descriptions and photographs of these Discomycetes. The authors of this paper, however, have not followed the nomenclature adopted by Seaver, for it is based on the rules of the American Code which are not in accord with the International Rules of Botanical Nomenclature.

To be in unison with the British mycologists (Ramsbottom, 1913), and to refrain from adding any further confusion to an already chaotic field, we have followed the arrangement given by Boudier in his "Histoire et Classification des Discomycètes d'Europe" (1907) as this is the course suggested to us in correspondence with Sir Arthur Hill, who writes—"It would be better to follow Boudier for the present, as do most European mycologists, although Boudier's nomenclature is also not always in accordance with Rules. Until there is an agreed list of *Nomina generica conservanda,* with type or standard species, for fungi, it is inadvisable to attempt to alter names in fairly general use."

The other contributors to the systematics of Australian Discomycetes have been Cooke (1892) and Rodway (1924). Each of these workers has followed different authorities in deciding on the nomenclature of their recorded and newly described forms, so where necessary synonymy will be included to render it easy to trace the history of the forms already on record for Australia.

All colour notes have been made using Ridgway (1912) as a standard.

ALEURIEAE.

Aleuria

(*a*) *Levispores.*

ALEURIA DOMICILIANA (Cooke) McL. and H. (nov. comb.).

Apothecia gregarious, stipitate, concave when young, soon becoming strongly repand, with a depression in the region of the stem, at first rounded, mature specimens often becoming angular in outline, from 1.5–10 cm. in diameter, stem up to 1 cm. in length, 0.5 cm. broad; externally white, hymenium clay colour to tawny olive; asci cylindrical, blue with iodine; spores ellipsoid, hyaline, smooth, 8–10.5 × 14–18μ; paraphyses slender, septate, enlarging above.

Recorded for Victoria, Australia, for the first time; the specimens were found growing in a cask near Melbourne in July, 1935. Collected by Miss G. Fawcett.

Seaver (1928) records specimens found in cellars, mushroom caves, and occasionally in greenhouses, usually growing on plaster, sand, gravel, or coal dust.

Type Locality.—Scotland.

Distribution.—North America, Europe, and Australia (Victoria).

ALEURIA REPANDA (Pers.) Gill.

Apothecia repand, very short stipitate, externally whitish, mealy, 3–6 cm. in diameter; hymenium cinnamon brown, margin more or less entire; stem short, stout, usually only a few mms. long, more like a rooting base, or wanting; asci cylindrical, blue with iodine; spores ellipsoid, mostly non-guttulate, smooth, hyaline, 8.6–12 × 15–18μ; paraphyses not numerous, slender, septate, branched, with conspicuously swollen apices.

First recorded for Australia by Cooke (1892) as *Discina repanda* Wahl., on rotten trunks and the ground, Victoria and New South Wales, and for Tasmania by Rodway (1924) as *Peziza repanda* Wahl. (*Discina repanda,* Fries.). Redescribed above from specimens on wood collected at Warrandyte, Apollo Bay and Fern Tree Gully, Victoria, from July to September, 1935.

Type Locality.—Europe.

Distribution.—North America, Europe, Australia (Victoria, New South Wales, Queensland, and Tasmania).

ALEURIA VIOLACEA (Pers.) Gill.

Apothecia sessile, occasionally substipitate, shallow cup-shaped, discoid, or repand, regular when young, becoming irregular when old; hymenium concave, plane or convex, dark vinaceous-drab, sometimes becoming Dresden brown to raw umber, externally whitish but with a purplish tinge, 1.5–5.5 cm. in diameter; asci cylindrical, 8-spored, blue with iodine; spores usually 1-seriate, ellipsoid, faintly bi-guttulate, hyaline, smooth, 7–8 × 11–13μ, paraphyses slender, septate, enlarged above, curved, usually reaching a diameter of 6μ at the apices, coloured brown, becoming yellow towards the base.

Boudier (1907) recognizes *Aleuria violacea* (Pers.) Gill., but in his definition of the genus he describes the spores as non-guttulate. The Australian specimens examined by us have always shown bi-guttulate spores, and in this feature appear exceptional.

On ashes or burnt ground, Lorne, Apollo Bay and Balnarring, Victoria, May to September, the first record for Australia.

Type Locality.—Europe.

Distribution.—North America, Germany, Finland, Australia (Victoria).

(*b*) *Verrucispores.*

ALEURIA APICULATA (Cooke) Boud.

Apothecia sessile, scattered, cup-shaped to discoid, fleshy, margin entire, up to 3 cm. in diameter; hymenium mummy brown, concave; asci cylindrical, blue with iodine, 8-spored; spores oblong-ellipsoid, pale brown, delicately sculptured with minute warts, often with a small apiculus at each end, 8.5–12 × 21–25.5μ; paraphyses filiform, septate, often adhering together, brown.

First recorded for Australia (Victoria) by Cooke (1892), on bark, as *Peziza* (*Phaeopezia*) *apiculata* Cooke. The above description is based on specimens growing on soil, collected at Macedon, Victoria, in October, 1931.

Type Locality.—Italy.

Distribution.—North America, Europe, Australia (Victoria).

SARCOSPHAERA FUNERATA (Cooke) Seaver.

Apothecia scattered, entirely immersed in sand, globose, at first closed, then at maturity bursting above into several lobes in a Geaster-like manner, reaching a diameter of 2 cm., broadly stipitate, stems up to 2 cm. in length, spreading out at the base in a root-like fashion, externally clothed with a mass of entangled hyphae to which the sand particles adhere; hymenium auburn; asci turning blue with iodine, 8-spored; spores broadly elliptic, smooth, hyaline, thick walled, thicker at the ends, 13–18 × 23.5–29μ; paraphyses clavate, slightly curved at the apices, septate and moniliform.

In sandy soil.

The specimens from which the above description was made were collected on a hillside in the Wyperfield National Reserve, Victoria, Australia, by Mr. R. Croll, in October, 1935.

Type Locality.—Florida.

Distribution.—North America, Australia (Victoria, South Australia, and Tasmania).

Sarcosphaera funerata (Cooke) Seaver was recorded from South Australia in 1885, as *Peziza fumerata* Cooke, Clarendon, 1882. This record was in name only (Tepper, 1885). The specific name was incorrectly spelt.

Rodway (1924) recorded a new species of *Sepultaria* for Tasmania from Bellerive, which he named *S. austro-geaster.* Type material of this form was obtained from the Tasmanian museum through the courtesy of the Director, Dr. Joseph Pearson, and examination showed it to be identical with the older species, *Sarcosphaera funerata.*

From a note accompanying Rodway's type material, apparently another collection of his form was made at Mount Nelson Range. The spore measurements given in the published account of the Bellerive material are 10 × 24μ, but after examination of further material from Mount Nelson Range, Rodway gives the spore measurements in a note on the outside of the packet as 10 × 24–28μ.

Although *Sarcosphaera funerata* was recorded for South Australia as *Peziza fumerata* Cooke in 1885, in name only, this is the first record for Victoria, and detailed description of the form for Australia, under the name *Sarcosphaera funerata.*

PEZIZEAE.

Pustularia cupularis (Linn.) Fuck.

Apothecia gregarious, briefly stipitate, slender, globose, reaching a diameter of 0.3 cm.–1 cm., margin crenated, externally mealy, Dresden brown, internally tawny-olive, plant resembling a small acorn cup; stem short, from 2–3 mm. long and about 1 mm. thick, expanding abruptly into the apothecium; hymenium concave; asci cylindrical, not coloured blue with iodine; spores 1-seriate, hyaline, smooth, bi-guttulate, 10–12 × 18–20μ; paraphyses hyaline, septated, slightly enlarged above.

On the ground, Warrandyte, Victoria, Australia, July, 1935. First record for Australia.

Type Locality.—Europe.

Distribution.—North America, Europe, Australia (Victoria).

Peziza aurantia Pers.

Apothecia gregarious, from 0.5–6 cm. in diameter, cups shallow when young, quite flat when older, often somewhat contorted, may be Otidea-like occasionally, externally whitish pruinose; hymenium when young scarlet to grenadine red, larger and older specimens orange chrome; asci cylindric, not turning blue with iodine; spores 1-seriate, arranged obliquely in the ascus, at first smooth with two oil drops, but soon becoming sculptured, 8–10 × 15–22μ; spore ornamentation in form of reticulations which are regular and shallow, the ridges often projecting at the ends, giving rise to apiculi; reticulations 2–3μ across spaces; paraphyses abruptly enlarged at apices, filled with orange granules, turn green with iodine.

On soil. First recorded for Australia by Cooke (1882), from Victoria, New South Wales, and Tasmania, and by Rodway (1924) for Tasmania. The above description is a more detailed account of the species.

Type Locality.—Europe.

Distribution.—North America, Europe, Australia (Victoria, New South Wales, and Tasmania).

PEZIZA RHENANA Fuck.

Apothecia caespitose, usually 1–2 cm. in diameter, stipitate, externally whitish, tomentose; stem variable in length, up to 2 cm.; hymenium concave, Mars orange; asci cylindrical, not coloured with iodine, possessing stem-like base; spores ellipsoid, hyaline, bi-guttulate, at first smooth, then sculptured, 9–12 × 19–22μ; spore sculpturing consisting of reticulations, the ridges extending beyond the periphery of the spore; paraphyses filiform, filled with orange granules, green with iodine.

On soil. First recorded for Australia by Cooke (1892), from West Australia, as *Sarcoscypha rhenana* (Fuck.) Sacc. The above description is based on material collected at Macedon, Victoria, July, 1935.

Type Locality.—Europe.

Distribution.—North America, Europe, Australia (Western Australia and Victoria).

URNULA CAMPYLOSPORA (Berk.) Cooke.

Apothecia infundibuliform, black, up to 2.5 cm. broad, shortly or elongated stipitate, tough, externally fibrillose, deeply or irregularly rugose, margin incurved, stem even or sulcate, 1–2 cm. long, asci cylindrical, not blue with iodine; ascospores curved, rounded at the ends, 10–13 × 23–32μ; paraphyses slender, branched, frequently bent at the apices.

On decaying wood, recorded for Queensland and New Zealand by Cooke (1892), for New South Wales by Cleland and Cheel (1917) (1919), and for Tasmania by Rodway (1924), but this is the first record of the fungus for Victoria; specimens were collected at Yallourn in June, 1929, and at Mount Sabine (Otway Ranges) in May, 1936.

Type Locality.—New Zealand.

Distribution.—New Zealand, Australia (Queensland, Victoria, New South Wales).

LACHNEA VINOSO-BRUNNEA (B. & Br.) Sacc.

Apothecia sessile to short stipitate, gregarious, concave when young, becoming more flattened when older, sometimes with crenated margins, externally pale; pinkish buff, darker when young, clothed with short blunt, thick walled, septated hairs, giving the surface a furfuraceous appearance; hymenium burnt umber; asci cylindrical, not coloured blue with iodine; spores 8, ovoid hyaline, non-guttulate, with conspicuous gelatinous coats, finely sculptured when mature, 15–20 × 23–28μ; paraphyses slightly clavate, septate, yellowish brown.

First recorded on burnt ground by Cooke (1892) for Queensland, Australia, as *Lachnea vinoso-brunnea* B. & Br., and is now described more fully from specimens collected in Victoria from Heathmont, Kallista, and Eltham in November, 1934-1935.

Type Locality.—Australia (Queensland).

Distribution.—Australia (Queensland, Victoria).

CILIAREAE.

CILIARIA SCUTELLATA (L.) Quél.
1907.

Apothecia gregarious, sessile, 2-6 mm. in diameter, globose and closed when young, appearing dark brown from the external covering of hairs, expanding and becoming discoid at maturity, with the margin slightly raised and fringed with conspicuous brown hairs; hymenium English red to burnt sienna; hairs with rooting bases, gradually tapering to bristle-like apices, up to 2 mm. in length, thick walled, septate; asci cylindrical, not coloured blue with iodine; spores 8, elliptical, smooth, filled with oil drops, 11.5–13.3 × 16.8–20μ; paraphyses strongly enlarged above, reaching a diameter of 7–9μ at their apices.

First recorded on rotten wood by Cooke (1892) for Victoria, Queensland, New South Wales, Western Australia, and Tasmania, as *Lachnea (Scutellinia) scutellata* L., and has less frequently been found growing on soil in Victoria since then. Recorded by Rodway (1924) for Tasmania as *Lachnea scutellata* Gill.

Type Locality.—Europe.

Distribution.—North America, Europe, Australia (Victoria, Western Australia, Queensland, New South Wales, and Tasmania).

NEOTIELLA CATHARINAEA sp. nov.

Apothecia solitaria, disciformi, modo sessili modo breviter stipitata, 4–5 cm. in diam., extrinsecus capillacea. Hymenio "capucine yellow to orange." Ascis cylindricis, cum iodino haud caeruleis. Sporis octo, ellipsoid., hyalinis, reticulatis, bi-guttulatis, 23–26 × 13–16μ. Paraphysibus septatis, ramulatis, granulorum aurantiacorum ad apices refertis.

In axillis foliorum plantae musci *Catharinaea Mülleri* Hamp. et C. Müll.

Apotheeia usually solitary, sub-globose when young, very minute, gradually expanding until disc-shaped at maturity, sessile to very short stipitate, reaching 4–5 mm. in diameter, externally clothed with white downy hairs; hymenium plane, sometimes convex, capucine yellow to orange, surrounded by a delicate fringe of hyaline (white to the naked eye) hairs; asci cylindrical, operculate, not coloured blue with iodine; spores 8, ellipsoid, hyaline, uniseriate, with ends slightly over-lapping, reticulate, usually bi-guttulate, 13–16 × 23–26μ; paraphyses slightly enlarged above, projecting beyond the ripe asci, septate, branched, densely filled with minute orange granules at their apices.

On the moss plant *Catharinaea Mülleri* Hamp. et C. Müll., apothecia occurring in the axils of the leaves. Collected at Kallista and Ferntree Gully, Victoria, from September to December, 1925-1934.

Type Locality.—Kallista, Victoria.

Distribution.—Australia (Victoria).

The apothecia are situated in the axils of the leaves and a longitudinal section through a plant shows a mass of entangled hyphae at the base, which appears to act as an anchor. (Plate I., Fig. 6.) When cut transversely in the same region this mass of hyphae is seen to extend around the moss stem externally, as a band of coarse interwoven hyphae.

The hyphae towards the outer surface of the fruit body are arranged in a pseudo-parenchymatic manner and form a well-defined exciple. (Plate I., Fig. 6.) The entire outer surface is densely clothed with thick walled septated hairs of varying lengths, usually unbranched, but sometimes branched (Plate I., Fig. 4A), varying from 6–9μ in diameter and gradually tapering towards their blunt apices (Plate I., Fig. 4B). At the margin of the exciple the hairs form a fringe around the hymenium; this is diagrammatically represented in Plate I., Fig. 5.

In the young ascus the spores contain smaller and more numerous oil drops, and entirely lack reticulate thickening; they are uniseriate but are situated close together at the top of the ascus. As the spores mature the oil is collected into one or two large drops, the reticulations appear, and the spores extend further down into the ascus. (Plate I., Fig. 2.) The paraphyses slightly exceed the asci, they are septated, and branched, some almost profusely towards their bases, others more commonly as in Plate I., Fig. 2, towards the apex.

Cooke (1892) founded the genus *Neotiella*, which he described as possessing minute, sessile, patellate to cup-shaped fruit bodies covered with slender white hairs, disc richly coloured to white, asci cylindrical, 8-spored, ellipsoid to oblong, hyaline. The species recognised by Saccardo as belonging to the genus, either possess smooth or roughened spores. The majority are terricole in habit, frequently found nestling at the base of moss plants, others are lignicole, usually growing on decaying wood. Corner (1929) states that " few discomycetes are known to be parasitic on bryophytes, though many live amongst such plants." He describes an operculate discomycete with the vegetative characters of a mildew and fruit bodies which resemble perithecia. Corner places his fungus in the genus *Neotiella* as *N. Crozalsiana* Grelet, which he records as an ectoparasite in England, on *Plagiochila asplenioides* (L.) Dum., discovered in France in 1924.

Neotiella Crozalsiana has smooth spores with thickened ends, and possesses appressoria and special haustorial branches which penetrate the cells of the liverwort.

The only example of a reticulate spored form is met with in *Neotiella Rozei* Boud., which differs widely from *Neotiella Catharinaea* however, in regard to size of fruit body, colour of hymenium, spore measurements and habit.

The unusual situation of the apothecia in the axils of the moss leaves, and the reticulate sculpturing of the spore wall are the outstanding characters of the new species, and on account of the habit of the fungus on the moss plant *Catharinaea* it is named *Neotiella Catharinaea* spec. nov.

HUMAREAE.

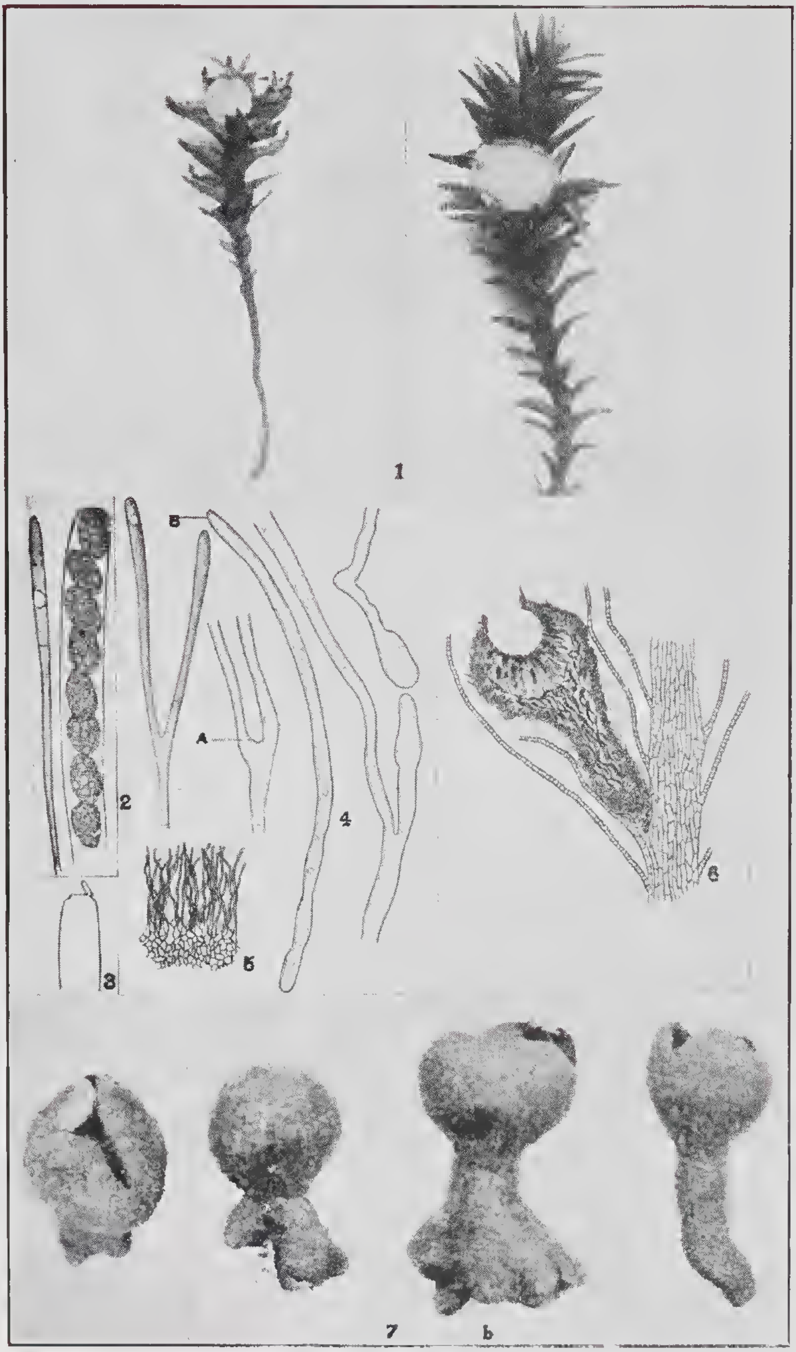
Lamprospora polytrichina (Rehm) Seaver.

Apothecia single or gregarious, sessile, at first sub-globose, becoming scutellate or shallow cup-shaped, reaching a diameter of 1 cm., margin wavy; hymenium carnelian red to vinaceous-rufous; asci cylindrical, not coloured blue with iodine; spores 1-seriate, smooth, hyaline, from 13–16μ in diameter, filled with numerous oil drops; paraphyses slender, usually curved at the apices and filled with orange granules.

Recorded by Cooke (1892) for Australia (Victoria), and New Zealand as *Humaria miltina* Berk. and by Rodway (1924) for Tasmania as *Barlaea miltina* Berk. The specimens from which the above description was made were collected at Heathmont and Sandringham on burnt ground amongst mosses.

Type Locality.—Europe.

Distribution.—America, Europe, Australia (Victoria and Tasmania), and New Zealand.



Neotiella Catharinaea.

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Explanation of Plate II.

Fig. 1.—Plants of *Neotiella Catharinaea* sp. nov. on *Catharinaea Mülleri* Hamp. et C. Müll. × 2.

Fig. 2.—Portion of ascus of *N. Catharinaea* showing spores, and paraphyses. × 174.

Fig. 3.—Operculate ascus of *N. Catharinaea*. × 174.

Fig. 4.—Septated hairs of *N. Catharinaea*. × 174. A. Branched hair. B. Blunt apex.

Fig. 5.—Exciple with fringe of hairs—*N. Catharinaea*. (Diagrammatic.)

Fig. 6.—L. S. through an apothecium of *N. Catharinaea* in the axil of a leaf of the moss. (Diagrammatic.)

Fig. 7.—Plants of *Sarcosphaera funerata* (Cooke) Seaver. Nat. size. (*a*) Viewed from above. (*b*) Viewed from the side.